

### **REMARKS**

This Amendment is submitted in reply to the Office Action dated March 17, 2003. Applicants respectfully request reconsideration and further examination of the patent application under 37 C.F.R. § 1.111.

Upon entry of the foregoing Amendment claims 1, 12, 18 and 19 have been amended and claims 5 and 8 - 11 have been cancelled. Claims 1 - 4, 6, 7 and 12 - 19 remain in the application. The amendments are believed to introduce no new matter, and their entry is respectfully requested. Based on the above amendment and the following remarks, Applicants respectfully request that the Examiner reconsider and withdraw all outstanding rejections.

#### **Summary of First Office Action**

I. The Drawings were objected to as the Examiner believes that the drawings do not show every feature of claims 2, 8, 9, 10 and 11 as required in 37 CFR 1.83(a).

II. The specification was objected to as on page 4, last full paragraph where the reference to the incorrect figure was made. Further, vis-à-vis claim 10, the Examiner believes no antecedent basis is provided for in the specification.

III. Claims 18 and 19 were rejected to under 35 U.S.C. 112, second paragraph, as being indefinite as claim 18 recites “the layer” which lacks an antecedent basis in claim 1.

IV. Claims 1 - 18 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuda (US Patent No. 6,018,282)) in view of Sogo et al. (US Patent No. 5,192,926).

V. Claim 19 was rejected to under 35 U.S.C. 103(a) as being unpatentable Tsuda (US Patent No. 6,018,282)) in view of Sogo et al. (US Patent No. 5,192,926) as applied in IV, and further in view of Chiu et al.

#### **Summary of Amendment**

Claims 1, 12, 18 and 19 have been amended and claims 5 and 8 - 11 have been cancelled. Claims 1 - 4, 6, 7 and 12 - 19 remain in the application. The limitations of claim 5 have been included into claim one and further the addition of performance requirements of the tunable material have been added. Support for the addition of the tunable dielectric performance requirements can be found beginning on page 6, line 14.

#### **Remarks regarding I:**

Claims 8 - 11 have been cancelled pursuant to the Examiner's objection. Regarding the Examiners rejection of claim 2, Applicants submit the following. 37 CFR 1.83 does provide:

(a) The drawing in a nonprovisional application must show every feature of the invention specified in the claims.

However, 37 CFR goes on to say:

However, conventional features disclosed in the description and claims, where their detailed illustration is not essential for a proper understanding of the invention, should be illustrated in the drawing in the form of a graphical drawing symbol or a labeled representation (e.g., a labeled rectangular box).

Applicants submit that Figure 1 provides rectangular boxes 16, 18, and 20 all labeled as resonator. Further, the detailed description on page 3, beginning at line 33, provides, “A plurality of resonators 16, 18, and 20 are serially coupled to each other and to the input and output.” Applicants generically refer to a resonator, for which anyone of reasonable skill in the art would understand to include, but not be limited to, a microstrip, a stripline, a coaxial line, a dielectric resonator, or a waveguide.

37 CFR 1.81 also provides:

- (a) The applicant for a patent is required to furnish a drawing of his or her invention where necessary for the understanding of the subject matter sought to be patented...
- (b) Drawings may include illustrations which facilitate an understanding of the invention (for example, flowsheets in cases of processes, and diagrammatic views).

In the instant case, Applicants have provided a rectangular box describing where in the system the resonator is positioned and how it functions; and one skilled in the art can easily substitute different types of resonators known to those skilled in the art without undue experimentation. Thus, specific resonator types are not necessary as provided for in 37 CFR 1.81.

Applicant believes that with the cancellation of claims 8 - 11 and the above remarks, this objection is traversed.

**Remarks regarding II:**

The specification was amended on page 4, last full paragraph, where the reference is now made to correct Figure 6. Regarding claim 10, where the Examiner believed no antecedent basis is provided for in the specification, claim 10 has been cancelled.

**Remarks regarding III:**

Regarding claims 18 and 19 which the Examiner rejected under 35 U.S.C. 112, second paragraph, as being indefinite as claim 18 recites “the layer” which lacked an antecedent basis in claim 1, claim 18 now reads:

18. (Amended) A voltage-controlled tunable filter according to claim 1, wherein the tunable dielectric film comprises a material selected from the group of:  $\text{Ba}_x\text{Sr}_{1-x}\text{TiO}_3$ ,  $\text{Ba}_x\text{Ca}_{1-x}\text{TiO}_3$ ,  $\text{Pb}_x\text{Zr}_{1-x}\text{TiO}_3$ ,  $\text{Pb}_x\text{Zr}_{1-x}\text{SrTiO}_3$ ,  $\text{KTa}_x\text{Nb}_{1-x}\text{O}_3$ , lead lanthanum zirconium titanate,  $\text{PbTiO}_3$ ,  $\text{BaCaZrTiO}_3$ ,  $\text{NaNO}_3$ ,  $\text{KNbO}_3$ ,  $\text{LiNbO}_3$ ,  $\text{LiTaO}_3$ ,  $\text{PbNb}_2\text{O}_6$ ,  $\text{PbTa}_2\text{O}_6$ ,  $\text{KSr}(\text{NbO}_3)$  and  $\text{NaBa}_2(\text{NbO}_3)_5\text{KH}_2\text{PO}_4$ , and compositions thereof.

As the claim now reads, “tunable dielectric film” as set forth in claim 1, antecedent support is provided in claim 1 for 18.

**Remarks regarding IV:**

Regarding the rejection of claims 1 - 18 under 35 U.S.C. 103(a) as being unpatentable over Tsuda (US Patent No. 6,018,282)) in view of Sogo et al. (US Patent No. 5,192,926), Applicants submit the following remarks.

Claim 1 has been amended to include the following performance parameters which are critical to and achievable by the tunable dielectric of the present invention, but not possible by the tunable dielectric of Tsuda. To wit, claim 1 now includes:

“said tunable capacitors comprising, a first electrode; a tunable dielectric film positioned on the first electrode; and a second electrode positioned on a surface of the tunable dielectric film opposite the first electrode and wherein for operation at frequencies ranging from 1.0 GHz to 10 GHz, the loss tangent would range from 0.001 to 0.005; for operation at frequencies ranging from 10 GHz to 20 GHz, the loss tangent would range from 0.005 to 0.01; for operation at frequencies ranging from 20 GHz to 30 GHz, the loss tangent would range from 0.01 to 0.02;”

Indeed, Tsuda does not operate at the frequency ranges with loss tangent range for the given frequencies above. At best, he operates at lower voltages (0 - 5 volts) at limited frequencies. Tsuda states, “Accordingly, if, for example, 5V is applied by the integrated circuit 54 to the control voltage terminals 65 and 65a, the passing characteristics of the voltage-controlled variable-passband filter 51, as shown in FIG. 6, are such that a peak frequency in the vicinity of 1.9 GHz is obtained. Thus, the filter characteristics necessary in the first stage or between high-frequency stages of a high-

frequency circuit for the PHS system can be obtained. On the other hand, if the integrated circuit 54 applies 0V, the pass characteristics, as shown in FIG. 7, are such that a peak frequency in the vicinity of 1.44 GHz is obtained. Thus, the filter characteristics necessary in the first stage or between high-frequency stages of a transmission circuit for the PDC system can be obtained. Again, if the integrated circuit 54 applies 0.5 V, the pass characteristics, as shown in FIG. 8, are such that a peak frequency in the vicinity of 1.49 GHz is obtained. Thus, the filter characteristics necessary in the first stage or between high-frequency stages of a receiving circuit for the PDC system can be obtained.”

Even if Tsuda could operate at the performance levels articulated by Applicant on pages 5 - 11, the Examiner stated that Tsuda does not show “means for coupling non-adjacent ones of the resonators”. The Applicant respectfully submits that the Examiner cannot satisfy the basic requirements of a *prima facie* case of obviousness by using Tsuda and Sogo et al. to reject the aforementioned claims. For the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the references. Second, there must be some reasonable expectation of success. Finally, the references when combined must teach or suggest all of the claimed limitations. Manual of Patent Examining Procedure, Section 2143. For the reasons articulated below, the Applicant believes that in the present case, the Examiner has not met this burden.

Although, Togo discloses a capacitive coupling, result of and reason for the coupling is significantly different than Applicants. Applicants are not attempting to sharpen the frequency response, but rather to provide for an asymmetric frequency response over a broad frequency range. Thus, using the capacitive coupling of Togo would not be obvious to use in the Tsuda to achieve the

present invention as dissimilar results are desired in dissimilar systems.

Again, Tsuda only makes brief mention of the tunable dielectric material, whereas Applicant, being an expert in the tunable dielectric field has expended significant resources to accomplish the performance parameters as set for in claim 1. Thus, Applicant submits that it would be very difficult to combine Tsuda with Sogo to achieve the invention of claim 1, as neither Tsuda or Sogo have the tunable dielectric knowledge to enable an electronically tunable combline filter with asymmetric response with the performance as set forth in claim 1. Lastly, the criticality of this high performance tunable dielectric to the present invention, where Tsuda will not even operate, (especially at high frequencies [e.g., > 10 GHz]) is set forth on page 11, line 32 and page 12, line 13,.

Based on the above remarks, Applicant believes the rejections set for in IV have been traversed or rendered moot.

**Remarks regarding V:**

As claim 19 is dependent from 18 which is dependent on claim 1, which Applicants submit the rejection for has been traversed, the rejection for claim 19 should be traversed as well.

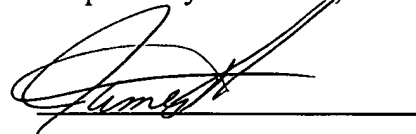
### CONCLUSION

From the foregoing, Applicants respectfully submit that all of the stated grounds of rejections have been properly traversed, accommodated, or rendered moot. Accordingly, Applicants respectfully request that the application is in condition for allowance and respectfully request such action.

If the Examiner believes, for any reasons, that personal communication will expedite prosecution of this application the Examiner is invited to telephone the undersigned at the following number: 202-607-4607.

The USPTO is authorized to charge Deposit Account No. 502697 any fees associated with this response including the petition for the two month extension.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "James S. Finn", is written over a horizontal line.

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